REMARKS

In the Final Rejection, dated March 23, 2006, Claims 1-13 were rejected under 35 U.S.C. 103 as being unpatentable over Fragstein (US 6,074,738) for reasons set forth in the Action. An appeal was filed with the result that the examiner's position was affirmed by the BOARD OF PATENT APPEALS AND INTERFERENCES. In order to overcome this rejection, claims 1 and 13 are amended to state that the pore size of the film is an order of magnitude smaller than a pore size of the microporous membrane. Thus, claim 1 and its dependent claims 2-12, as well as independent claim 13, include the limitations of the relative pore size, a limitation not previously presented in the claims. This limitation finds support in the specification on page 5 at lines 6-12. Upon review of the cited Fragstein patent, it appears that this limitation is not disclosed in Fragstein.

With respect to the foregoing rejections under 35 U.S.C. 103, it is requested that the examiner reconsider the argument previously submitted in this application in view of the present amendment. For convenience, the argument is presented below to show the presence of allowable subject matter in the claims.

The cited Fragstein (Abstract) teaches a composite of a layer of microporous polymer that is water-vapor permeable, oleophobic, and liquid-water resistant. This is in contact with a further layer that is an air-permeable, liquid-water resistant polymer layer permeable to water vapor molecules. This teaching also appears in col. 2 at lines 31-37, a passage cited by the examiner. In a further passage cited by the examiner in col. 1 at lines 10-13, there is a teaching of a flexible laminate composite suitable for use in water resistant but water vapor permeable textiles. The chemical compositions of materials that may be employed in the fabrication of the microporous layer are identified in col. 3 at lines 47-53, also cited by the examiner. The examiner also noted that various parameters of ePTFE layers can vary, depending on application, as set forth in col. 6 at lines 43-44.

In the Fragstein patent, it appears that the term "film" is employed in describing the microporous layer (col. 2 at lines 49-51), but there is no teaching of the use of a film with reference to the coating (line 63) that provides the polymer producing the oleophobic characteristic (line 57) in a microporous layer of the Fragstein composite.

Furthermore, as already noted above, the present independent claims recite the additional limitation wherein the breathable film has a pore size that is an order of magnitude smaller than a pore size of the microporous membrane.

Film is an important component of the present invention and, therefore, it is important to understand the difference between a film and a coating. This can be demonstrated readily by reference to the blowing of bubbles by children. One form of bubble blowing device is composed of a wand having a loop at its distal end, wherein the proximal end of the wand serves as a handle. If the device is dipped into plain water, and then lifted out of the water, water is found to adhere to the loop and to the handle. This water, until it dries or drips off the device, may be referred to as coating of water. In particular, it is noted that there is no film extending across the loop. Upon repeating the foregoing experiment with soapy water, it is observed that a film of soapy water extends across the loop, and the handle is wet with a coating of soapy water. The film can be blown off the loop to form a bubble.

Plain water is able to form a film across a very small region (on the order of millimeters) as is found in window screening that protects homes from the ingress of insects, but does not form a film across a distance of an inch as is found in the bubble blowing device. Thus, with respect to the child's bubble-blowing device, a coating of plain water would not be regarded as a film forming coating. However, a coating of soapy water would be regarded as a film-forming coating.

In view of the present amendment, the question of what is film and what is coating is answered because of the distinguishing feature of the smaller pore size in the film as

compared to the pore size of the membrane which supports the film.

As taught on page 5 (last full paragraph) of the present specification, in the construction of the hybrid microporous membrane 14 of the invention, the monolithic breathable membrane, or film, that serves as an augmenting layer on the microporous membrane, as the coating 12, or within the microporous membrane, as shown in Fig. 1, is applied as a liquid compound. A preferred method of application of the liquid compound is by gravure or flexographic coating or other thin gauge liquid application technology ideally capable of creating augmentation, the breathable film or coating 12, with a thickness in the range of 0.5 - 10 microns. Thus, in the construction of the present invention, one uses a coating that can form a film across pores of a microporous membrane.

However, a contrary teaching appears in Fragstein, wherein (col. 3 at lines 60-64) the coating of the oleophobic polymer is applied in a fashion allowing ingress upon the internal surfaces of the microporous structure, but not to fill the pores because such filling would destroy or decrease the moisture vapor transmission of the microporous layer. The polymeric coating of Fragstein is clearly not a film forming coating. This is a clear distinction from the present invention wherein the coating is employed to produce a film that extends across the pores of the microporous layer.

In the middle of page 3 of the Office Action, the examiner concludes from the examples of Fragstein that the microporous layer is much thicker than the coating layer, which coating layer is understood to be the polymer providing the oleophobic property. The examiner then concludes that one has freedom to make the coating as thin as desired, such as a thickness of 0.5-10 microns, this corresponding to the teaching of the present application on page 5, as noted above.

This logic of the examiner is traversed respectfully because it is believed that control of thicknesses of layers at such a small thickness, particularly over the opening of a pore, can

be accomplished only by placing a film over the opening of the pore. In Fragstein, no such film can be formed because of the nature of the liquid polymer to flow into the pore, as confirmed by Fragstein when he cautions against allowing too much of the polymer to flow into a pore, as has been described above.

Furthermore, as described above, the application of the Fragstein polymer, in the manner of a coating, is continued until a proper coating of the interior pore surfaces is attained, but must be stopped prior to a filling of the pores. Therefore, a builder of the Fragstein structure does not have the freedom to adjust the thickness of the coating layer (identified as the layer b in the Fragstein description). For this reason, also, the logic of the examiner in assuming that the thickness of coating layer is a matter of choice, cannot stand.

It is noted also that the primary purpose of Fragstein in the development of his invention is preparation of material for a garment that is breathable and also provides protection from rain (col. 1 at lines 10-16). In particular, as noted in the Fragstein claims there is a goal of imparting oleophobicity to a microporous polymer. In the present application, the paragraph linking pages 5-6 presents a listing of several standard tests for verify characteristics of the membrane of the present invention, these characteristics including liquid penetration resistance, industrial chemical penetration resistances, resistance to blood and blood borne pathogens, and moisture vapor transmission rate. Thus, the film characteristics, such as the film thickness, must be carefully controlled and selected to meet a variety of tasks, such as those for which the above tests are conducted. The mode of construction of the polymer coating in Fragstein, which is dictated by the amount of polymer in a pore, does not permit construction of a composite structure of membrane and film that can meet all the requirements of the present membrane.

Furthermore, the materials employed in the present invention for fabrication of the film, urethane polymer or a hydrophilic cellulose (as set forth in claim 2), are not disclosed in Fragstein. In fact, Fragstein would not use the coating (film) materials of the present invention

because his goal to produce oleophobicity for which he uses other chemistry as is set forth in col. 2 at lines 56-65.

The foregoing argument shows clear distinctions between the presently claimed subject matter and the teachings of Fragstein. Therefore, it is urged that, based on the teachings of the cited art, the present claims do present allowable subject matter.

The foregoing amendment is believed to meet all the points raised by the Examiner so as to place the claims in condition for allowance. If any of the matters raised in the Action or any further matters have not been adequately resolved by this amendment, a telephone interview between Applicant's representative and the Examiner is requested in order to resolve any such outstanding matters.

It is believed that all the claims are now in condition for allowance in that they patently distinguish over the art. Accordingly, a favorable response indicating such condition is earnestly solicited.

Respectfully submitted,

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